

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US05/03520

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC: **E21B 7/06 (2006.01)**

USPC: 175/82;464/109

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 175/82,83,95,101; 166/66.4; 74/500.5, 502.6; 464/52,53,109

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,244,361 B1 (COMEAU et al.) 12 June 2001 (12.06.2001), whole document.	1-21
A, P	US 6,808,027 B2 (MCLOUGHLIN et al.) 26 October 2004 (26.10.2004), whole document	1-21
A	US 5,979,570 A (MCLOUGHLIN et al.) 9 November 1999 (09.11.1999), whole document	1-21

<input type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input type="checkbox"/>	See patent family annex.
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>			
"T"		later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
"X"		document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
"Y"		document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	
"&"		document member of the same patent family	

Date of the actual completion of the international search 08 May 2006 (08.05.2006)	Date of mailing of the international search report 16 AUG 2006
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer David J. Bagnell Signature: <i>David J. Bagnell</i> Telephone No. (571) 272-5150

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Continuation of B. FIELDS SEARCHED Item 3:  
Derwent, JPO, EPO

terms: drill, eccentric, rotary vector,